

## **Operations Description**

The grain milling baghouse is a stationary filter that consists of an induced draft (ID) fan along with an indexing arm and a reverse air system. The ID fan creates a vacuum which draws dust from 2 hammermills, and the rest of the associated milling conveyors. As the dust enters the baghouse it is drawn across the filters which separate the dust from the air. The resulting filtered air exits the baghouse travels through the ID fan then exits the system through the stack.

As the filters become coated with dust the reverse air system cleans the dust from the filters. The reverse air system blows compressed air backwards against the bags causing the dust to fall from the filter. This system uses an indexing arm which rotates inside the unit to clean all filters. As the dust falls from the filters it accumulates in the bottom of the baghouse where it is conveyed back into the grain milling conveyors and into the grain bins.

## **Effected Equipment**

Y1340  
BE 1345  
GS 1402  
TK 1405  
HM 1420  
HM 1430  
RA 1452  
RA 1454  
Y1451  
Y1453  
Y1458  
Y1450  
Y1440

## **Baghouse Operating Procedures**

The grain receiving baghouse is essential to operating the grain receiving system. The primary reason for its operation is safety. If dust is not drawn off the effected equipment and allowed to accumulate a dust explosion is possible. Dust suppression is also essential to OTAE's environmental compliance policies. Due to these factors at no time is it permitted to continue grain milling operations if the grain receiving baghouse is shutdown. The grain milling baghouse must be in operation before any of the effected equipment can be energized.

## **Operating parameters**

- All blast gates must be at least partially opened. (never isolated)
- Baghouse differential pressure must be between 1 inch to 6 inches W.C.
- Particulate emissions should not be present at anytime.
- All components of the baghouse must be in operation at all times.

## **Control Practices**

**The grain milling baghouse is controlled by a local PLC. The local controls consist of level detection in the baghouse and also motion detection of the associated equipment. In the event the system experiences an alarm an alarm signal will be sent to the plant distributed control system. (DCS) Depending on the severity of the alarm the unit will either continue to operate and allow the plant to process corn. Or it will shut the system down and prohibit the facility to process corn.**

**Operator checks are also an integral part of the baghouse control. Operators will be making regular rounds in the area to ensure all equipment is functioning properly. Also operators will be obtaining differential pressure readings once per day while the unit is in operation. If the unit is outside of its 1" – 6" operating parameter the situation is to be reported immediately, and grain receiving operations are to stop until the unit has returned to compliance. If visible emissions are detected the unit is to shut down and grain milling operations to stop immediately until the unit has been returned to normal operation.**

## **Employee Training Program**

**OTAE's employee training program is based with on the job training with supplemental classroom training. All of OTAE's environmental policies are backed by the OTAE SOPs. SOPs are kept in the control room and are available to all employees.**



## ***Grain Milling Baghouse***

### ***Safety***

These hazards present themselves in operating the Grain Handling section

Mechanical hazards are present from rotating equipment such as conveyors and elevators.

- Keep arms and hands away from operating conveyors and elevators to avoid personal injury.
- Start conveyor equipment only after a complete inspection following the recommendations from the manufacturer.
- Never reach into a conveyor without the power being locked out.

Dusts, including grain dusts, are a fire and explosion hazard. In order to prevent or minimize the damage from dust explosions, two things must be done..

- Eliminate and or control potential ignition sources such as welding and cutting, electrical arcs, hot bearings, ect.
- Control fuel source (grain dust)

Of the two components, fuel control is the most difficult and expensive to achieve. However, assuming an initial explosion does occur, the best way to mitigate the destructive consequences of a secondary explosion is by effective dust control. Ensure dust filters are cleaned/ changed regularly as needed.

### ***Prestart up***

- Conduct a prestart up safety review of the Grain Receiving, Grain Storage and Grain Milling Areas.
- Complete and close out all maintenance and hot work permits.
- Complete the lock/tag out list.
- Inspect conveyors and elevators in the area to check for mechanical integrity, and ensure all guards are in place.
- Check that all equipment is off with their breakers closed at the MCC.
- Place all control loops in Manual at zero valve output on the DCS.
- Ensure that all utilities are commissioned and available.

### *Start Up*

**Press Start** on the DCS Interface to initiate the automatic startup of the Grains Milling systems. This will automatically start the Grain Milling Dust System.

Equipment that will start:

- Main Fan
- Reverse Air Fan
- Index arm
- Rotary Valve
- Conveyor

Once the Grains Milling System has started it is now safe to mill corn.